**Resistance *oi* Germs to Pesticides**

2123. SHRI SHAMIM HASHMI : Will the Minister of HEALTH AND FAMILY WELFARE be pleased to state whether any studies have been conducted in India or abroad which shows that the high resistance of vectors of disease germs to various pesticides now in use and if so, te details thereof and the corrective step taken/ proposed to be taken in this regard?

THE MINISTER OF STATE IIN THE MINISTRY OF HEALTH AND FAMILY WELFARE (KUMARI SAROJ KHAPARDE); Yes, Sir. The Vector Control Research Centre, Pondicherry and Malaria Research Centre have also carried out several studie* on insecticide resistance in malarta vectors particularly Anopheles stephensi and Anopheles culicifa-cies Mechanism of insecticide resistance is being investigated in laboratories of the Centre. Anopheles stephensi has become resistant to DDT and dieldrin in most parts of the country while resistance to other insecticides like malathion etc. is not so commonly encountered. It is a vector of urban malaria and in urban areas. A stephensi control is based on anti-larval methods where insecticides are not the main methods of control. Therefore, resistance has not interfered in any significant manner in the control of urban malaria. However the situation in regard to the control of A. culcifacies is rather complicated due to the evolution of resistance against tho common'y used insecticides. This vector has become resistant to DDT in almost all parts of the country, although the level of resistance varies greatly from place to placp but comhlpte control of vectors is not achievable. The vector has also become resistant to BHC in large parts of the country Therefore in areas with resistance in A. oulicifacies to DDT and BHC, malathion is being sprayed Unfortunately the vector has developed some deeree of resistance to malathion as well so that effective control of A. culicifacies is not obtainable in areas under malathion. spray. The vectors have innerent characteristics to become resistant to new insecticides and, therefore, judi cious use °f inseticides is recommend ed both for economic and scientific reasons.

There are a few reports of insecticides resistance in A fluviatilis another vector of malaria and in other vectorf species e.g. A. dirus A Minimus, A. sundaicus, A. nivipes insecticide resistance is not the problem. The strategy adopted *to* tackle the problem of insecticide resistance to DDT, BHC is used. In areas where $th_e$ vector has become resistant to DDT and BHC, malathion is used. In areas with multiple resistance (i.e. to DDT, BHC and malathion) new-over insecticides like fenitrothion, na-led and certain Pyrethroids are being field tested. Malaria Research Centre of the Council has developed on the basis of pilot projects a strategy for bio-environments control of malaria.

**Trials of pesticides**

2124. SHRI SHAMIM HASHMI : Will the PRIME MINISTER be pleased to state:

(a) whether CSIR, ICMR and other ICAR Labbora^ories have conducted trials over last decade on occurrence of pesticides in food, water, milk, fish etc. and in environment and if so, the details thereof;

(b) whether these studies show occurrence of various pesticides in use for agriculture and health far in excess of pemisible limits and if so, the action taken to check the same; and

*(c)* whether the studies have been conducted in respect of all pesticides registered for use in India and if not, the reasons thereof?

THE MINTSTER OF STATE IN THE MINTSTRY OF SCIENCE AND TECHNOLOGY AND THE MINISTER OF STATE. TN THE DEPARTMENTS OF OCFAN DEVELOPMENT. ATOMIC ENERGV. ELECTRONICS AND SPACE (SHRl K. R. NARAYAN-

AN): (a) Yes, Sir. Major work in this regard is being done by the ICAR, under an all India Coordinated Research Project on pesticides residues .since the sixth plan period. The main objectives of the project are to: —

(i) Organise, promote and Coordinate research on pesticide residues in agricultural product and other components of environment at all India level.

(ii) Monitor the pesticide residues in abiotic and biotic components of environment.

(iii) Devise and improve sampling extraction and analytical technology to facilitate quantification of pesticide residues and degradation products in soil, plants, grains and to provide facilities for quality assurance to ensure reliability of residue data.

(vi Examine the effect of processing of food commodities for removal of pesticide residues.

(v) Maintain upto date information on pesticide residues and to provide guidelines to research and extension workers in the country.

(b) Results have shown that occurrence of DDT and BHC residue in few milk samples is rnore than permissible limits. In few eases, residue of total HCH and DDT in samples of edible oil and oilseeds -was also found to be higher than value set by WHO, Geneva. Since waiting period, washing, cooking, dehydration, rubbing etc. helps in reducing the residue levels for field crops, wide publicity covering all these aspects is being given.

(ei Studies have not been conducted in respect of all pesticides registered for use in lndia as many of them are less persistent in the environment and are bio-degTadable.

**Development of Remote Sensing Technology**

2125. SHRl BAIKUNTHNATH SAHU: Will the PRIME MINISTER be pleased to state:

(a) what specific steps have been taken by Government to develop remote sensing Technology in the country;

(b) the achievement made in this regard so far;

(p) the steps taken to improve the remote sensing Technology more result oriented; and

(d) if so, the details thereof?

THE MINISTER OF STATE IN THE MINISTRY OF SCIENCE AND TECHNOLOGY AND THE MINISTER OF STATE IN THE DEPARTMENTS OF OCEAN DEVELOPMENT, ATOMIC ENERGY, ELECTRONICS AND SPACE (SHRl K. R. NARAYANAN): (a) to (d) The experimental remote sensing satellite, Bhaskara-?' (1979) and Bhaskara-2 (1981) and the earlier Rohini Satellites which carried experimental remote sensing payloads, paved the way to conceiving and building a series of operational Indian Remote Sensing Satellites. The successful launch of IRS-1 A the first in this series on March 17, 1988 and subsequent operationalisa-tion of its systems for the reception, processing and dissemination of its data has been a major achievement of ISRO in remote sensing. The LISS-T and II cameras of TRS-1A have been providing excellent data for several remote sensing applications. IRS-1A will be followed bv the subsequent launchings of IRS-TJB and further IRS Continuation satellites. The Indian Remote Sensing Satellite System is tailored to the needs of Indian resources survev and management laying stress on agriculture water management, forestry. geology,

land use planning, etc.

Flowing from the above the other achievements related to increased use ' of remote sensing technology for na-